

# PATENT ABSTRACTS OF JAPAN

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## (54) RAW MATERIAL FOR DIETARY PROCESSED FOOD AND DIETARY PROCESSED FOOD

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To obtain an extremely safe dietary food using a natural food and gentle to human bodies, especially a dietary processed food extremely safe for the human bodies, having both actions of fast-acting and slow-acting properties, further activating lipid metabolism, preventing weakening (osteoporosis) of bones causing a fear during the dieting and ameliorating obesity in response to various social situations at present and strong demands of the society on safety for foods by using carefully selected materials from daily frequently eaten materials and a raw material for the dietary processed food.

**SOLUTION:** This dietary processed food is obtained by suitably formulating a marine-derived peptide and/or a plant-derived peptide prepared by enzymic hydrolysis and/or a seaweed-derived polyphenol ingredient-containing food obtained by extraction with an organic solvent. Furthermore, the dietary processed food is especially prepared by suitably formulating a soybean protein peptide obtained by enzymic hydrolysis with a similarly prepared sardine peptide and an extract of Eisenia bicyclis or further suitably formulating vitamin Ks and pantothenic acid.

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CLAIMS

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[Claim(s)]

[Claim 1] The diet processing food-grade raw material characterized by coming suitably to blend the peptide of the oceanic origin which understands by the enzyme and is obtained and the peptide of the vegetable origin, and/or oceanic polyphenol component content food.

[Claim 2] Said rate of a compounding ratio is a diet processing food-grade raw material according to claim 1 characterized by being 1:9-9:1.

[Claim 3] The diet processing food-grade raw material according to claim 1 characterized by coming to blend vitamin Ks and/or pantothenic acid with said diet processing food-grade raw material suitably.

[Claim 4] said vitamin Ks and/or pantothenic acid -- 0.1-10mg % of the weight -- the diet processing food-grade raw material according to claim 3 characterized by coming to blend.

[Claim 5] The diet processing food-grade raw material according to claim 1 to 4 characterized by said peptide chain length being 3-8.

[Claim 6] The peptide of said vegetable origin is a diet processing food-grade raw material according to claim 1 to 5 characterized by including at least one or more of barley, wheat, a potato, an soybean, a Chinese quince, and wine lees.

[Claim 7] Said polyphenol component content food is a diet processing food-grade raw material according to claim 1 to 6 characterized by being marine algae.

[Claim 8] the seaweed used as said polyphenol component content food -- oh -- the diet processing food-grade raw material according to claim 7 characterized by being brown algae, such as \*\* (\*\*\*\*).

[Claim 9] The peptide of said oceanic origin is a diet processing food-grade raw material according to claim 1 to 8 characterized by being based on fishes.

[Claim 10] The fishes used as a peptide of said oceanic origin are diet processing food-grade raw materials according to claim 9 characterized by being based on a sardine and/or mackerel.

[Claim 11] The diet processing food-grade raw material characterized by coming to blend the sardine peptide obtained similarly with the soybean protein peptide which understands by the enzyme and is obtained in 3:7-7:3.

[Claim 12] the sardine peptide similarly obtained by the soybean protein peptide which understands by the enzyme and is obtained, and oh -- the diet processing food-grade raw material characterized by coming to blend \*\*\*\*\* in 3:7-7:3.

[Claim 13] the soybean protein peptide and sardine peptide which understand by the enzyme and are obtained -- oh -- the diet processing food-grade raw material which comes to blend \*\*\*\*\*, vitamin Ks, and/or pantothenic acid.

[Claim 14] The diet processed food which comes to use said diet processing food-grade raw material according to claim 1 to 12.

[Claim 15] the soybean protein peptide and sardine peptide which understand by the enzyme and are obtained -- oh -- the diet processed food which comes to use \*\*\*\*\*, vitamin Ks, and/or pantothenic acid.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a very safe especially gentle to the body using natural food diet processed food, and its raw material about the processed food for an obesity improvement and a diet, and its raw material.

[0002]

[Description of the Prior Art] Generally, it is supposed that many of obesity is guided by intake of a superfluous calorie and the consumption fall of energy. In order to refrain from intake of a superfluous calorie, it is needless to say, and the caloric intake itself is restricted, or a stock-in-trade restricts a high calorie component like a fat or a saccharide, and it is common to use metabolic turnover articles, such as a low-calorie sweetener, further again, and to stop an intake calorie.

[0003] In recent years, the interest about food with the absorption inhibition effectiveness of high calorie nutrients, such as a fat, or its material is also high as a way stage of these obesity improvements, and especially, when a dietary fiber prevents absorption of a lipid or sugar, the interest is increasing as what prevents absorption of a superfluous calorie. In response to the intention of WHO, the Japan Society for the Study of Obesity general meeting was held in October, Heisei 11, and the "Tokyo Declaration" which advertized the importance of obesity prevention is adopted based on the present condition of the obesity in our country. Thus, an obesity improvement and prevention serve as a constant serious theme in society today.

[0004] Generally, in order to make the amount of consumption energy increase, it is effective to perform movement to which the body is moved directly, but when setting loss in quantity as the main purpose, reinforcement movement is needed and the activation is not easy. Moreover, although there is pharmacotherapy as a second best policy and there are an anorexing agent, a lipid absorption inhibitor, a digestion inhibitor, an adiposity inhibitor, a metabolic turnover accelerator, alpha-glucosidase inhibitor (alpha-amylase inhibitor), etc. variously, the present condition is that use is accepted only to obesity advanced in medicine, and it can say easily that it is widely used by neither.

[0005] In addition, relevance of obesity with lifestyle-related diseases (adult disease), such as diabetes mellitus, is high, and the need for the prevention or a dissolution is pointed out strongly again. Although the various going-on-a-diet methods including current, obesity improvement food, or diet food are proposed, the present condition is that development of the active principle for the further insurance and effective diet food is called for in addition.

[0006] It is also just going to be known by using the matter which checks the activity of the enzyme which participates in the reaction in the living body which results in them as one means of prevention of the above-mentioned obesity that it can attain. That is, it is thought that obesity can attain the above-mentioned purpose also by using a digestive enzyme inhibitor, for example, alpha-amylase inhibitor.

[0007] In addition, the diet edible material which consists of the water-soluble peptide and effective water-soluble materials which are obtained by carrying out enzyme processing of the beef as a conventional technique is indicated by JP,10-66542,A. Moreover, the diet food containing an animal compound amino acid peptide, vitamin B, caffeine, and calcium is indicated by JP,12-189108,A. Moreover, the animal meat peptide which has carnitine, lactobacillus bifidus, gal senior extractives, The lipid metabolism processed food which used a purslane and tea-leaves extractives as the enteric sugar-coated tablet is indicated by JP,12-228967,A. Moreover, the diet food containing the peptide extracted from the muscles of the sheep is indicated by JP,6-225726,A. Moreover, protein or a protein inclusion is hydrolyzed from a protease or an acid, and it is manufactured, and average peptide chain length is 3-4, and the lipid metabolism improvement agent which makes an active principle the low-molecular peptide included at least 50% or more and which has triglyceride fall ability is indicated by JP,5-87052,B. In these things, what put in the corpuscle and

internal organs of a cow or the sheep as an animal peptide is seen.

[0008] It is what was made in order that this invention might improve these further after taking the above-mentioned conventional example into consideration in view of a demand of the strong society to current various social situations and the current safety to food variously and might solve this technical problem. Although often eaten daily, the foods selected carefully from inside are used, and it aims at providing the body with the raw material for obesity improvement food and diet food and this processed food of insurance and low calorie content extremely. Moreover, this invention aims at preventing weakening (bone rarefaction) of the bone about which we are anxious during a diet with activation of lipid metabolism.

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, it is the diet processing food-grade raw material characterized by invention according to claim 1 coming suitably to blend the peptide of the vegetable origin which understands by the enzyme and is obtained and the peptide of the oceanic origin, and/or oceanic polyphenol component content food. In this invention, a diet operation is conjointly invited to the combination of the peptide component which has fat metabolism, and the polyphenol component which has an alpha-amylase inhibitor operation at an effective target. Moreover, in this invention, both the operations effectiveness quick-acting and with a delayed effect is taken into consideration. That is, since it comes to blend the oceanic origin with a strong reduction operation of body fat by the peptide and chronic administration of the vegetable origin with the strong digestion depressant action of a fat in 1-time administration suitably, a very safe diet processing food-grade raw material gentle to the well-balanced body as an obesity improvement or an object for diet food can be obtained.

[0010] Moreover, invention according to claim 2 is characterized by said rates of a compounding ratio being 1:9-9:1. since the rate of a compounding ratio was broadly adopted in this invention — a case — dividing — that is, the obesity improvement which has the broad operation effectiveness and diet processing food-grade raw material which can emphasize suitably both the operations effectiveness quick-acting and with a delayed effect, respectively can be obtained.

[0011] Moreover, invention according to claim 3 is characterized by coming to blend vitamin Ks and/or pantothenic acid with said diet processing food-grade raw material suitably. In this invention, since a vitamin K and pantothenic acid were blended, the operation which prevents weakening (bone rarefaction) of the bone by diet, and activates lipid metabolism further is seen.

[0012] moreover, invention according to claim 4 — said vitamin Ks and/or pantothenic acid — 0.1-10mg % of the weight — it is characterized by coming to blend. In this invention, since the vitamin K and the combination rate of pantothenic acid were specified, the operation which prevents weakening (bone rarefaction) of the bone by diet effectively, and activates lipid metabolism still more effectively is seen.

[0013] Moreover, invention according to claim 5 is characterized by said peptide chain length being 3-8. In this invention, since it comes to limit peptide chain length, the operation effectiveness can make a clear low-molecular peptide an active principle.

[0014] Moreover, invention according to claim 6 is characterized by the peptide of said vegetable origin containing at least one or more of barley, wheat, a potato, an soybean, a Chinese quince, and wine lees. In this invention, since it comes to carry out limited listing of the peptide of the effective vegetable origin as a fat metabolic regulation peptide, that operation effectiveness shows up clearly.

[0015] Moreover, invention according to claim 7 is characterized by said polyphenol component content food being marine algae. oh which is used in this invention — the marine algae containing brown algae, such as \*\*, — that component — phloroglucine, its polymer (FURORO tannin) (reference name: the April, Heisei 12 issue, Nobuo Yamada work "science of seaweed use" the 198th page), etc. — etc. — polyphenol is contained. About this polyphenol, as a result of this invention persons' repeating examination wholeheartedly, it was found out that there is a very strong alpha-amylase inhibitor operation. Therefore, since generation of grape sugar is controlled from starch, generation of the neutral fat of the grape sugar origin is severed, and obesity prevention can be expected.

[0016] moreover, the seaweed which uses invention according to claim 8 as said polyphenol component content food — oh, it is characterized by being brown algae, such as \*\* (\*\*\*\*). in this invention, polyphenol, such as phloroglucine and its polymer, is contained for that component, and alpha-amylase inhibitor is accepted — oh, since brown algae, such as \*\*, were adopted, it is suitable as an obesity improvement or a diet processing food-grade raw material.

[0017] Moreover, invention of claim 9 is characterized by basing the peptide of said oceanic origin on fishes. In this invention, since that existence adopted the fishes peptide accepted as an oceanic peptide, it is suitable as an obesity improvement or a diet processing food-grade raw material. [ many ]

[0018] Moreover, the fishes which use invention of claim 10 as a peptide of said oceanic origin are characterized by being based on a sardine and/or mackerel. the sardine peptide with which many that existence is accepted as a fishes peptide in this invention, and mackerel — since the peptide was adopted,

it is suitable as an obesity improvement or a diet processing food-grade raw material.

[0019] Moreover, invention of claim 11 is characterized by coming to blend the sardine peptide obtained similarly with the soybean protein peptide which understands by the enzyme and is obtained in 3:7-7:3. In this invention, since the high soybean protein and the high sardine of that operation effectiveness were adopted as a zymolysis peptide, it is more suitable as an obesity improvement or a diet processing food-grade raw material.

[0020] moreover, the sardine peptide similarly obtained by the soybean protein peptide which understands invention of claim 12 by the enzyme and is obtained — and — oh, it is characterized by coming to blend \*\*\*\*\* in 3:7-7:3. in this invention, the high soybean protein, the sardine, and alpha-amylase inhibitor of that operation effectiveness are accepted as a zymolysis peptide — oh, since \*\* was adopted, it is more suitable as an obesity improvement or a diet processing food-grade raw material.

[0021] moreover, the soybean protein peptide and sardine peptide which understand invention according to claim 13 by the enzyme, and are obtained — oh, it is characterized by coming to blend \*\*\*\*\*, vitamin Ks, and/or pantothenic acid. In this invention, since it comes to use it combining the effective obesity improvement which has improved variously as mentioned above, or a diet processing food-grade raw material, the diet processing food-grade raw material with which those operation effectiveness is seen in multiplication is obtained.

[0022] Moreover, invention according to claim 14 is a diet processed food which comes to use said diet processing food-grade raw material according to claim 1 to 12. In this invention, since it comes to use the effective obesity improvement which has improved variously as mentioned above, and a diet processing food-grade raw material, the diet processed food with which those operation effectiveness is seen clearly is obtained.

[0023] moreover, the soybean protein peptide and sardine peptide which understand invention according to claim 15 by the enzyme, and are obtained — oh, it is the diet processed food which comes to use \*\*\*\*\*, vitamin Ks, and/or pantothenic acid. In this invention, since it comes to use the effective obesity improvement which has improved variously as mentioned above, and a diet processing food-grade raw material, the diet processed food with which those operation effectiveness is seen in multiplication can be obtained, bony weakening (bone rarefaction) can be prevented especially, and lipid metabolism can be urged further, and also the high diet processed food of the alpha-amylase inhibitor operation effectiveness can be obtained.

[Embodiment of the Invention]

[0024] this invention persons resulted in the completion of this invention which uses those peptides as a principal component by understanding these materials by the enzyme and blending suitably the thing of the vegetable origin, and the thing of the oceanic protein origin, as a result of examining the diet effectiveness and an obesity improvement effect wholeheartedly out of the ecology accommodation function which it has [ sardine / these soybean protein, ]. furthermore — oh, paying attention to the polyphenol component obtained by carrying out an organic solvent extract with water alcohols being contained in marine algae, such as \*\*, this is blended with the above-mentioned material and the obesity improvement operation effectiveness is found out further. in order for this invention persons to prevent weakening (bone rarefaction) of the bone by diet further again — vitamin K 2 etc. — in order to find out that it is effective to add vitamin Ks and to urge the further lipid metabolism, it finds out that it is effective to add pantothenic acid, and it results in completion of this invention.

[0025] This invention can acquire the effectiveness which is not seen by these independent things by combining an oceanic peptide, a vegetable peptide, and/or oceanic polyphenol component content food, and using \*\*. for a sardine, by the following tables 1 and 2, a lot of peptides include so that clearly — having — \*\*\*\* — in addition — and the amino acid covering other types is included. moreover, by Table 3 - 6 which carries out a postscript, many peptides effective for an improvement and diet of obesity contain in an soybean so that clearly — having — \*\*\*\* — moreover — oh, enzyme inhibition activity is contained also in \*\* and many polyphenol, such as phloroglucine in which an obesity improvement and the diet effectiveness are accepted, and its polymer, is contained. moreover — oh, coming to also contain the material used as the raw material of an alginic acid is also known by \*\*.

[0026] The fatty acid which is the component which constitutes the fat although the fat which it is under obesity is a high calorie and high energy nutrient needless to say serves as a form which is incorporated by the intracellular mitochondrion, produces ATP aerobically through beta-oxidation, TCA cycle, and the oxidative phosphorylation, and is easy to use as energy, and is disassembled into a carbon dioxide and water. It can be called that to which advancing lipid metabolism based on these elucidations leads to the operation effectiveness of the improvement of obesity, or a diet. Moreover, although an alpha-amylase inhibitor, for example, starch, serves as grape sugar by alpha-amylase and this grape sugar is metabolized by carbon dioxide gas and water by movement and others, if it becomes the lack of movement, this grape

sugar will serve as body fat (obesity). Therefore, if alpha-amylase inhibitor exists, generation of grape sugar will be suppressed and obesity will be suppressed.

[0027] The oceanic protein used for the diet processing food-grade raw material in this invention and the low-molecular peptide slack oligopeptide of the soybean origin have the operation which decreases (1) body fat, and the operation which controls the digestion of (2) carbohydrates and sugar. The low-molecular peptide of the oceanic protein origin is performing as follows the operation which decreases body fat. People's body usually disassembles the protein taken in into a peptide first, and is disassembling and carrying out digestion even of the amino acid for the peptide further. And it compounds with peptide → protein from the amino acid absorbed conversely, and the body is made this time. A fat burns as an energy source at the time of this protein synthesis. However, since molecular weight is small, the low-molecular peptide of the oceanic protein origin is absorbed with a peptide, without disassembling even amino acid. For this reason, it is fewer than usual one process, absorption efficiency is very good, the amount of the fat which burns as an energy source in that part protein synthesis also increases, and the excessive fat currently therefore attached to the body burns rapidly, and decrease in number.

[0028] In addition, it is supposed again that it has the operation which controls the digestion of a carbohydrate and sugar in the peptide of the above-mentioned vegetable origin, for example, the low-molecular-weight peptide of the soybean origin, and although vegetation, such as not only an soybean but wheat, barley, etc., is in the fate eaten by the animal, if all will be eaten up and it will be carried out, his descendant cannot leave it. Then, the matter (it has the operation which controls work of alpha-amylase inhibitor / digestive enzyme) which stops the digestion of a carbohydrate is included so that a part may return from excrement to the earth, without carrying out digestion for all even if eaten by the animal. It has an alpha-amylase inhibitor operation, and both cooperate, and there is also a polyphenol component of the seaweed origin, and it severs generation of the neutral fat of the grape sugar origin from starch so that it may mention later. Barley, wheat, a potato, a Chinese quince, wine lees, etc. can use it for the peptide of this vegetable origin other than an soybean. Starch, the dextrin, the collagen, etc. contain in these and reducing cholesterol and neutral fat is accepted in them. Since the peptide of these vegetable origins is blended, a diet processing food-grade raw material with suitable color and taste is obtained.

[0029] moreover, the marine algae containing brown algae which are one component which constitutes this invention — as a mixed component — suitable — especially — oh, it has become clear that the polyphenol component contains in \*\* and there is alpha-amylase inhibitor, and enzyme inhibition activity is contained — oh, \*\* is very suitable as a material for diet processing food-grade raw materials. as the enzyme inhibition of the purpose of this invention to this invention — oh — from \*\* — an extract — powder and a liquid are contained. oh [ this ] — the component extract of \*\* — first — a mixer — oh, \*\*, pure water, and a methanol are put in, a methanol is added after grinding, and it is immersed at a room temperature. An immersion object carries out cerite filtration and condenses filtrate. The heating dissolution of the concentrate is carried out at pure water, it filters through a filter paper, filtrate is condensed again, and it may dissolve in pure water. Thus, if the obtained syrup or the freeze-drying powder is added for food, for example, confectionary, a digestive enzyme inhibitor, for example, the diet food by alpha-amylase inhibitor activity, will be obtained.

[0030] Moreover, K1 of nature [ vitamin Ks / which are one component which constitutes this invention ] And K2 Existence is known well and these are fat soluble vitamins with an anti-bleeding operation. Moreover, vitamin K 3 called menadione It is synthetic-compounds 2-MECHIRU 1,4-naphthoquinone, and has the strong vitamin operation. gamma-carboxy glutamic-acid residue is contained in the protein combined with calcium, such as a thrombin, in a clot-of-blood factor with regards to generation of the prothrombin this vitamin K of whose is the base of the blood coagulation enzyme thrombin in blood, and being the component which needs a vitamin K for this gamma-carboxylation is admitted. consequently, the operation which prevents bony weakening (bone rarefaction) to a vitamin K — accepting — \*\*\*\*\* — it became like. This invention is made to act effectively and good conjointly with the various components of the above [ the operation which these vitamin Ks have ] as a diet processing food-grade raw material and a diet processed food. Especially, weakening (bone rarefaction) of the bone which is easy to happen during a diet is prevented.

[0031] Moreover, the pantothenic acid which is one component which constitutes this invention is one of the vitamin B complex, and being extremely distributed over an animals-and-plants in-house broadly with a minute amount is known. This pantothenic acid is used as a calcium salt or sodium salt. As this deficiency symptom of an animal object, the denaturation of a growth arrest, dermatitis, and a nervous system, the abnormalities of a digestive system, reduction of the antibody production force, the depression of the adrenal cortex, etc. are known. Furthermore, the lipid metabolism operation is accepted in this pantothenic acid in recent years, and this invention is made to act effectively and good conjointly as a diet processing food-grade raw material and a diet processed food with the various components of the above [ the lipid

metabolism operation which this pantothenic acid has ].

[0032] This invention depends a protein inclusion on the peptide which understands by the enzyme and is obtained, and the description is to make into an active principle the low-molecular peptide whose average peptide chain length is 3-8. It is the new diet food raw material which controls body fat by blending the strong peptide (oceanic protein origin) of a reduction operation of body fat by the suitable ratio by the strong peptide (vegetable origin) and the chronic administration of digestion depressant action of a fat in 1-time administration. Many peptides are contained by the high ratio, and many amino acid is contained in this sardine peptide so that clearly [ a sardine ] from the following tables 1 and 2.

[0033] Protein and its decomposition product (a peptide and amino acid) are widely distributed in a cell, and it is just going to be known well to have played the role important for maintenance (for body protein, an enzyme in the living body, hormone, etc. to be made) of a life. In addition to a fundamental trophicity, its attention is paid to a sardine peptide also in it suitable as a functional food material about control of some a living body's physiological functions, and that the hypolipidemic action is accepted in this sardine peptide.

[0034] In addition, as for the diet processing food-grade raw material and diet processed food by this invention, by fluid bed granulation (all components are mixed once, subsequently water is added and it is made liquefied, and disintegration is carried out after mixing further), since it becomes porosity (the molecular structure becomes granularity), it is easy to melt into water and mouthfeel does not become chalky, but a nutrition component becomes absorbed [ tend ] by the body. Moreover, when the improvement of the constipation often during a diet seen is achieved by combination of a water-soluble dietary fiber and it drinks by it, feeling of fullness is obtained, and it acts on the diet effectiveness good as a result. In addition, the vitamins and minerals other than a vitamin K and pantothenic acid can also be added according to recommended dietary allowance.

[0035]

[Table 1]

【表1】サーデンペプチド分析表

試験項目	基準値	測定結果	分析方法
水分 (%)	<9. 0	8. 1	減圧乾燥法
pH	5. 5~7. 0	5. 6	
塩分 (%)	<5. 0	4. 9	モール法
全窒素 (%)	12~16	14. 1	セミクロ ケルダール法
粗脂肪 (%)	<1. 0	0. 1	ソックスレー抽出法
ペプチド (%)	>85. 0	86. 2	高圧液体 (乾燥サンプル) クロマトグラフィー
好気性プレート数	<5. 000/g	<3. 000/g	標準培地
(一般細菌数)			(標準寒天法)
大腸菌群	陰性	陰性	デノキンコレート 培地

[0036]

[Table 2]

【表2】サーデンペプチドアミノ酸組成表

アミノ酸名	数値 ( $\mu\text{mol/g}$ )	アミノ酸名	数値 ( $\mu\text{mol/g}$ )
ノイドロキシプロリン	<10.5>	バリン	53.3
アスパラギン酸	26.2	メチオニン	15.8
グルタミン	23.3	イソロイシン	42.1
アスパラギン	2.1	ロイシン	170.0
トレオニン	35.0	チロシン	23.7
セリン	35.4	フェニルアラニン	95.8
グルタミン酸	32.5	トリプトファン	22.5
プロリン	16.7	ヒスチジン	28.3
グリシン	21.2	リジン	69.2
アラニン	55.4	アルギニン	57.1
シスチン	6.2		

[0037]

[Table 3]

【表3】大豆ペプチド組成表

項目	ハイニースト		
一般分析	PM	S	R
水分 (%)	4.6	4.8	4.9
粗たん白 (%)	84.0	82.8	83.7
粗灰分 (%)	5.9	5.3	6.3
糖質・その他 (%)	5.5	7.1	5.1
粗たん白分析	PM	S	R
NSI	99.9	96.8	100.0
15%CA			
可溶性たん白 (%)	99.7	87.4	99.7
平均ペプチド鎖長	3.2	3.5	3.2
遊離アミノ酸 (%)	14.5	12.8	13.7

[0038]

[Table 4]



【表4】大豆ペプチドのアミノ酸組成表(1/2)

アミノ酸の種類	ノイニユート		
必須アミノ酸	PM	S	R
スレオニン	37	38	37
チロシン	34	35	33
フェニルアラニン	49	52	45
システイン	13	13	11
メチオニン	12	12	11
バリン	44	46	43
イソロイシン	44	46	42
ロイシン	72	78	70
リジン	62	61	61
トリプトファン	12	14	10
ヒスチジン	24	24	23
非必須アミノ酸	PM	S	R
アスパラギン酸	120	127	116
セリン	52	53	52
グルタミン酸	208	198	203
プロリン	53	53	50
グリシン	40	41	39
アラニン	38	42	38
アルギニン	77	74	73

[0039]

[Table 5]

【表5】大豆ペプチドのアミノ酸組成表(2/2)

FAO/WHO/UNU (1985) の基準値

	乳 児	2～5歳	10～12歳	成 人
必須アミノ酸				
スレオニン	43	34	28	9
チロシン	72	63	22	19
フェニルアラニン	72	63	22	19
システイン	42	25	22	17
メチオニン	42	25	22	17
バリン	55	35	25	13
イソロイシン	46	28	28	13
ロイシン	93	66	44	19
リジン	66	58	44	16
トリプトファン	17	11	9	5
ヒスチジン	26	19	19	16

[0040]

[Table 6]

..【表6】あらめ成分表

成分名	数値 (g/100g)
水分	9. 7
粗脂肪	0. 1
マンニット	3. 53
ラミナラン	13. 32
アルギン酸	17. 87
粗繊維	10. 4
粗たんぱく質	8. 0
灰分	17. 7
糖質	54. 1

以上の他、ポリフェノール類として、フロログルシンおよびその重合体が含まれている (文献名:平成12年4月発行、山田信夫著「海藻利用の科学」第198頁)。

[0041]

[Example] The example of this invention is given and explained below.

(Example 1) By the following formula, the diet processing food-grade raw material was obtained.

(a) After adding water and a phosphoric acid in the end of a cleaning fish meal (sardine: made in Joban Phytochemistry Lab) and adjusting pH to 2.8, acid protease was added and it was made to react at 50 degrees C for 20 hours. After the reaction, after heating the reaction mixture concerned for 30 minutes at 80 degrees C and stopping a reaction, the water suspension of a calcium hydroxide was added and pH was adjusted to 6.5. After adding diatomaceous earth to this, it filtered by 100mesh, spray drying of the obtained filtrate was carried out, and powder was obtained. The average peptide chain length of this thing was 3.5.

(b) Subsequently, after adding water and a phosphoric acid to soybean protein (FUJI OIL Co., Ltd. make) and adjusting pH to 2.8, acid protease was added, it was operated like the above (a), and powder was obtained. The average peptide chain length of this thing was 3.6.

(c) Two sorts of powder obtained by doing in this way was mixed at (a)50% and (b)50%, and the container which carried out sterilization processing was filled up. The obtained powder is light yellow, and had the flavor of a proper, and the diet processing food-grade raw material without the different taste and a nasty smell was obtained.

[0042] (Example 2)

By the following formula, the diet processing food-grade raw material was obtained.

a) After adding water and a phosphoric acid in the end of a cleaning fish meal (sardine: made in Joban Phytochemistry Lab) and adjusting pH to 2.8, acid protease was added and it was made to react at 50 degrees C for 20 hours. After the reaction, after heating the reaction mixture concerned for 30 minutes at 80 degrees C and stopping a reaction, the water suspension of a calcium hydroxide was added and pH was adjusted to 6.5. After adding diatomaceous earth to this, it filtered by 100mesh, spray drying of the obtained filtrate was carried out, and powder was obtained. The average peptide chain length of this thing was 3.5.

b) Subsequently, after adding water and a phosphoric acid to soybean protein (FUJI OIL Co., Ltd. make) and adjusting pH to 2.8, acid protease was added, it was operated like the above (a), and powder was obtained. The average peptide chain length of this thing was 3.6.

c) two sorts of powder obtained by doing in this way — the amount of (a)20%, and (b) 50% — carrying out — these — oh, the amount of 30% of \*\*\*\*\* was mixed, and the container which carried out sterilization processing was filled up. The obtained powder is light yellow, and had the flavor of a proper, and the diet processing food-grade raw material without the different taste and a nasty smell was obtained.

[0043] (Example 3) By the following formula, the diet processing food-grade raw material was obtained.

a) After adding water and a phosphoric acid in the end of a cleaning fish meal (sardine: made in Joban Phytochemistry Lab) and adjusting pH to 2.8, acid protease was added and it was made to react at 50 degrees C for 20 hours. After the reaction, after heating the reaction mixture concerned for 30 minutes at 80 degrees C and stopping a reaction, the water suspension of a calcium hydroxide was added and pH was adjusted to 6.5. After adding diatomaceous earth to this, it filtered by 100mesh, spray drying of the obtained filtrate was carried out, and powder was obtained. The average peptide chain length of this thing

was 3.5.

b) Subsequently, after adding water and a phosphoric acid to soybean protein (FUJI OIL Co., Ltd. make) and adjusting pH to 2.8, acid protease was added, it was operated like the above (a), and powder was obtained. The average peptide chain length of this thing was 3.6.

c) two sorts of powder obtained by doing in this way is made into an amount (a)20%, and (b) 40%, and the vitamins and mineral of vitamin K 2 20mg%, the amount of pantothenic acid 10mg%, and others are included in these — oh, the amount of 40% of \*\*\*\*\* was mixed, and the container which carried out sterilization processing was filled up. The obtained powder is light yellow, and had the flavor of a proper, and the diet processing food-grade raw material without the different taste and a nasty smell was obtained. As a result of continuing and taking the diet processed food (example 4) which used this diet processing food-grade raw material at two weeks – 12 weeks, the obesity improvement was found so that it might see in Table 6. [0044] (Example 4) The energy and the nutrition component of a diet processed food which were obtained according to the example 3 were as follows.

140kcal (40g) energy and nutrition facts: One bag of inside of 1 meal (40g) Taste A Taste B Taste C A heating value and nutrition component (yogurt taste) (cocoa taste) (strawberry taste)  
A heating value (kcal) 137.20 137.60 137.20 Protein (g) 16.68 18.24 16.28 Lipid (g) 0.20 1.04 0.24 Sugar (g) 17.12 13.84 17.48 Sodium (mg) 160.40 172.00 165.20 vitamin A (IU) 1400. 00 1320.00 1560. 00 Vitamin B1 (mg) 0.628 0.60 0.632 Vitamin B2 (mg) 0.136 0.144 0.136 Niacin (mg) 10.28 7.96 9.56 Pantothenic acid (mg) 3.7323.944 3.996 vitamins B6 (mg) 0.816 0.816 1.064 Vitamin B12 (mug) 1.00 1.20 1.20 Folic acid (mug) 80.00 72.00 84.00 Vitamin C (mg) 40.00 38.40 46.00 Vitamin D (IU) 64.00 64.00 92.00 Vitamin E (mg) 4.04 3.76 3.88 Vitamin K 2 (mg) 8.00 8.008.00 Iron 7.00 (mg) 7.76 7.68 Calcium (mg) 282.80 320.40 277.60 Magnesium (mg) 50.8065.20 51.20 Potassium (g) 0.264 0.3640.268 Lynn (mg) 238.00 270.80 236.00 Dietary fiber (g) 4.20 4.144.16 [0045] (Example of a trial) oh — the polyphenol extraction method of \*\*, and alpha-amylase inhibitor activity trial: — adjustment approach [ of 1. sample ]: — a mixer — oh, 500g [ of \*\* ] (Product made from Watanabe Fishery), 1000ml [ of pure water ], and methanol 200ml was put in, methanol 300ml after grinding was added, and it was immersed at the room temperature for 240 hours. The immersion object carried out cerite filtration and condensed filtrate (21.8g). The concentrate carried out the heating dissolution at 100ml of pure water, and it filtered through the filter paper, filtrate was condensed again, it dissolved in 100ml of pure water, and it was made into the sample.

2. The experiment approach : it is sample (it is pure water at time of blank) 1ml to a test tube. The remaining heat of the 1ml (pancreatin: Wako reagent) of the alpha-amylase was put in and carried out for 37-degree-C 10 minutes, 3ml (Wako reagent) of fusibility starch was put in, and the reaction was started. The sugar of reaction mixture was measured in Somogyi method \*1.

\*1) Somogyi method (basic food group experiment document)

Put 1ml of reaction mixture, and 1ml of copper reagents into the test tube, it was made to react for 10 minutes in hot water, and depositing copper was made to color with a Nelson reagent. It is a spectrophotometer (UVmini1240SHIMADZU) after 15 minutes. Absorbance O.D.450nm was measured and the difference of the amount of glycogenesis estimated alpha-amylase inhibitor activity.

alpha-amylase inhibitor activity formula: —  $\{(S-Bs) - B\} / B \times 100S$ : — absorbance Bs: of a sample — blank B: of a sample — the blank, consequently the rate of alpha-amylase inhibitor inhibition of a sample were 43 (%).

[0046] The following of the case which drank the diet processed food which used the diet processing food-grade raw material by this invention is carried out.

Case by BMI(Body Mass Index) \*: \* value measuring method: Weight (kg) / (height (m)) Two names/Week  
0w 2w 4w 6w 8w 10w 12w A 54.4 53.6 53 53 51.5 51 50.6 B 53.2 50.8 49.6 48.8 47.8 48.2 47.2 C 68 66.4 64.6 64.2 61 D 63.8 61.2 61.2 60.6 59.2 57.2 E 74 70.6 69.268 66.2 65.2 63.4F 7574.4 71.2 69 68.266.8  
average \*\* standard deviation 64.7\*\*9.4 62.8\*\*9.4 59.5\*\*8.1 61.0\*\*8.7 Ratio of the 58.4\*\*8.7 57.7 \*\*7.6  
average 1 0.97 0.92 0.94 0.91 0.91 0.89 averages BMI 26.4 25.63 24.28 24.8923.91 23.83 The average age and height of change 6 case of 23.55: Name Age Height (cm)

A 22 163B 30 151C 41 161D 33 154E 30 156F 39 The 155 averages 32.5 156.6 [0047]

[Effect of the Invention] As mentioned above, according to this invention, since combination foods were chosen restrictively, a very safe obesity improvement gentle to the body, a diet processed food, and its raw material can be obtained. Moreover, since the peptide of the oceanic origin which understands by the enzyme and is obtained, and the peptide of the vegetable origin were blended, the diet processing food-grade raw material which has the operation effectiveness quick-acting and with a delayed effect can be obtained. Moreover, since it comes to blend a vitamin K, it is effective in the ability to prevent bony weakening (bone rarefaction) during a diet.

[0048] Moreover, since it comes suitably to blend the peptide of the oceanic origin which understands by the enzyme and is obtained and the peptide of the vegetable origin, and/or oceanic polyphenol component

content food according to invention according to claim 1, the operation effectiveness quick-acting and with a delayed effect arises. That is, since it comes to blend the oceanic protein origin with a strong reduction operation of body fat by the peptide and chronic administration of the vegetable origin with the strong digestion depressant action of a fat in 1-time administration suitably, a very safe diet processing food-grade raw material gentle to the well-balanced body as an obesity improvement or diet food can be obtained.

[0049] moreover — since according to invention according to claim 2 said rates of a compounding ratio are 1:9–9:1 and the rate of a compounding ratio was adopted broadly — a case — dividing — that is, the obesity improvement which has the broad operation effectiveness and diet processing food-grade raw material which can emphasize suitably the operation effectiveness quick-acting and with a delayed effect, respectively can be obtained.

[0050] Moreover, according to invention according to claim 3, the diet processing food-grade raw material with which the operation effectiveness of preventing weakening (bone rarefaction) of the bone by diet in it, and urging lipid metabolism to it further since it comes to blend vitamin Ks and/or pantothenic acid with said diet processing food-grade raw material suitably is seen can be obtained.

[0051] moreover, invention according to claim 4 — said diet processing food-grade raw material — vitamin Ks and/or pantothenic acid — 0.1–10mg % of the weight — since it blended suitably, the diet processing food-grade raw material with which the operation effectiveness to which weakening (bone rarefaction) of the bone by diet is prevented effectively, and lipid metabolism is urged still more effectively is seen can be obtained.

[0052] Moreover, according to invention according to claim 5, said peptide chain length is 3–8, and since it comes to limit peptide chain length, the operation effectiveness can make a clear low-molecular peptide an active principle.

[0053] Moreover, according to invention according to claim 6, since the peptide of said vegetable origin comes to carry out limited listing of the peptide of the effective vegetable origin as a fat metabolic regulation peptide among barley, wheat, a potato, an soybean, a Chinese quince, and wine lees or more including at least one, the operation effectiveness appears clearly.

[0054] moreover, oh in which according to invention according to claim 7 said polyphenol component content food is marine algae, polyphenol, such as phloroglucine and its polymer, is contained for the component, and alpha-amylase inhibitor is accepted — since the marine algae containing brown algae, such as \*\*, were adopted — an obesity improvement — a diet processing food-grade raw material is carried out, and there is suitable effectiveness.

[0055] moreover, the seaweed which uses invention according to claim 8 as said polyphenol component content food — oh, it is brown algae, such as \*\* (\*\*\*\*), polyphenol, such as phloroglucine and its polymer, is contained for the component, and alpha-amylase inhibitor is accepted — oh, since brown algae, such as \*\*, were adopted, there is the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material.

[0056] Moreover, according to invention according to claim 9, since the existence adopted the fishes peptide accepted as an oceanic peptide, the peptide of said oceanic origin has the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material. [ many ]

[0057] moreover, the sardine peptide, as for the fishes used as a peptide of said oceanic origin, many the existence is accepted to be as a fishes peptide by the sardine and/or mackerel according to invention according to claim 10 and mackerel — since the peptide was adopted, there is the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material.

[0058] Moreover, since according to invention according to claim 11 it came to blend the sardine peptide obtained like the soybean protein peptide which understands by the enzyme and is obtained in 3:7–7:3 and the high soybean protein and the high sardine of the operation effectiveness were adopted as a zymolysis peptide, there is the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material.

[0059] moreover, the sardine peptide obtained like [ according to invention according to claim 12 ] the soybean protein peptide which understands by the enzyme and is obtained — and — oh, it comes to blend \*\*\*\*\* in 3:7–7:3, and high soybean protein and a high sardine, and alpha-amylase inhibitor of the operation effectiveness are accepted as a zymolysis peptide — oh, since \*\* was adopted, there is the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material.

[0060] moreover, the sardine peptide obtained similarly [ according to invention according to claim 13 / peptide / which understands by the enzyme and is obtained / soybean-protein ] — and — oh, since it comes to use it combining the effective obesity improvement which came to blend \*\*\*\*\*, vitamin Ks, and/or pantothenic acid, and gave the above-mentioned versatility improvement, or a diet processing food-grade raw material, the operation effectiveness with those operation effectiveness suitable as a diet

processing food-grade raw material seen in multiplication is.

[0061] Moreover, according to invention according to claim 14, since it comes to use the effective obesity improvement which has improved variously as mentioned above, and a diet processing food-grade raw material, the diet processed food with which those operation effectiveness is seen clearly is obtained, and the diet processed food by this invention is fully especially urged to lipid metabolism, and can obtain the high diet processed food of the alpha-amylase inhibitor operation effectiveness further.

[0062] Oh, \*\*\*\*\*, a vitamin K, and/or pantothenic acid are blended. moreover, the soybean protein peptide and sardine peptide which according to invention according to claim 15 understand by the enzyme and are obtained — Since it comes to use the effective obesity improvement which has improved variously, and a diet processing food-grade raw material The diet processed food with which those operation effectiveness is seen clearly is obtained, bony weakening (bone rarefaction) can be prevented especially, lipid metabolism can be urged, and the high diet processed food of the alpha-amylase inhibitor operation effectiveness can be obtained further.

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**TECHNICAL FIELD**

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[Field of the Invention] This invention relates to a very safe especially gentle to the body using natural food diet processed food, and its raw material about the processed food for an obesity improvement and a diet, and its raw material.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] As mentioned above, according to this invention, since combination foods were chosen restrictively, a very safe obesity improvement gentle to the body, a diet processed food, and its raw material can be obtained. Moreover, since the peptide of the oceanic origin which understands by the enzyme and is obtained, and the peptide of the vegetable origin were blended, the diet processing food-grade raw material which has the operation effectiveness quick-acting and with a delayed effect can be obtained. Moreover, since it comes to blend a vitamin K, it is effective in the ability to prevent bony weakening (bone rarefaction) during a diet.

[0048] Moreover, since it comes suitably to blend the peptide of the oceanic origin which understands by the enzyme and is obtained and the peptide of the vegetable origin, and/or oceanic polyphenol component content food according to invention according to claim 1, the operation effectiveness quick-acting and with a delayed effect arises. That is, since it comes to blend the oceanic protein origin with a strong reduction operation of body fat by the peptide and chronic administration of the vegetable origin with the strong digestion depressant action of a fat in 1-time administration suitably, a very safe diet processing food-grade raw material gentle to the well-balanced body as an obesity improvement or diet food can be obtained.

[0049] moreover -- since according to invention according to claim 2 said rates of a compounding ratio are 1:9-9:1 and the rate of a compounding ratio was adopted broadly -- a case -- dividing -- that is, the obesity improvement which has the broad operation effectiveness and diet processing food-grade raw material which can emphasize suitably the operation effectiveness quick-acting and with a delayed effect, respectively can be obtained.

[0050] Moreover, according to invention according to claim 3, the diet processing food-grade raw material with which the operation effectiveness of preventing weakening (bone rarefaction) of the bone by diet in it, and urging lipid metabolism to it further since it comes to blend vitamin Ks and/or pantothenic acid with said diet processing food-grade raw material suitably is seen can be obtained.

[0051] moreover, invention according to claim 4 -- said diet processing food-grade raw material -- vitamin Ks and/or pantothenic acid -- 0.1-10mg % of the weight -- since it blended suitably, the diet processing food-grade raw material with which the operation effectiveness to which weakening (bone rarefaction) of the bone by diet is prevented effectively, and lipid metabolism is urged still more effectively is seen can be obtained.

[0052] Moreover, according to invention according to claim 5, said peptide chain length is 3-8, and since it comes to limit peptide chain length, the operation effectiveness can make a clear low-molecular peptide an active principle.

[0053] Moreover, according to invention according to claim 6, since the peptide of said vegetable origin comes to carry out limited listing of the peptide of the effective vegetable origin as a fat metabolic regulation peptide among barley, wheat, a potato, an soybean, a Chinese quince, and wine lees or more including at least one, the operation effectiveness appears clearly.

[0054] moreover, oh in which according to invention according to claim 7 said polyphenol component content food is marine algae, polyphenol, such as phloroglucine and its polymer, is contained for the component, and alpha-amylase inhibitor is accepted -- since the marine algae containing brown algae, such as \*\*, were adopted -- an obesity improvement -- a diet processing food-grade raw material is carried out, and there is suitable effectiveness.

[0055] moreover, the seaweed which uses invention according to claim 8 as said polyphenol component content food -- oh, it is brown algae, such as \*\* (\*\*\*\*), polyphenol, such as phloroglucine and its polymer, is contained for the component, and alpha-amylase inhibitor is accepted -- oh, since brown algae, such as \*\*, were adopted, there is the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material.

[0056] Moreover, according to invention according to claim 9, since the existence adopted the fishes peptide accepted as an oceanic peptide, the peptide of said oceanic origin has the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material. [ many ]

[0057] moreover, the sardine peptide, as for the fishes used as a peptide of said oceanic origin, many the existence is accepted to be as a fishes peptide by the sardine and/or mackerel according to invention according to claim 10 and mackerel — since the peptide was adopted, there is the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material.

[0058] Moreover, since according to invention according to claim 11 it came to blend the sardine peptide obtained like the soybean protein peptide which understands by the enzyme and is obtained in 3:7-7:3 and the high soybean protein and the high sardine of the operation effectiveness were adopted as a zymolysis peptide, there is the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material.

[0059] moreover, the sardine peptide obtained like [ according to invention according to claim 12 ] the soybean protein peptide which understands by the enzyme and is obtained — and — oh, it comes to blend \*\*\*\*\* in 3:7-7:3, and high soybean protein and a high sardine, and alpha-amylase inhibitor of the operation effectiveness are accepted as a zymolysis peptide — oh, since \*\* was adopted, there is the operation effectiveness suitable as an obesity improvement or a diet processing food-grade raw material.

[0060] moreover, the sardine peptide obtained similarly [ according to invention according to claim 13 / peptide / which understands by the enzyme and is obtained / soybean-protein ] — and — oh, since it comes to use it combining the effective obesity improvement which came to blend \*\*\*\*\*, vitamin Ks, and/or pantothenic acid, and gave the above-mentioned versatility improvement, or a diet processing food-grade raw material, the operation effectiveness with those operation effectiveness suitable as a diet processing food-grade raw material seen in multiplication is.

[0061] Moreover, according to invention according to claim 14, since it comes to use the effective obesity improvement which has improved variously as mentioned above, and a diet processing food-grade raw material, the diet processed food with which those operation effectiveness is seen clearly is obtained, and the diet processed food by this invention is fully especially urged to lipid metabolism, and can obtain the high diet processed food of the alpha-amylase inhibitor operation effectiveness further.

[0062] Oh, \*\*\*\*\*, a vitamin K, and/or pantothenic acid are blended. moreover, the soybean protein peptide and sardine peptide which according to invention according to claim 15 understand by the enzyme and are obtained — Since it comes to use the effective obesity improvement which has improved variously, and a diet processing food-grade raw material The diet processed food with which those operation effectiveness is seen clearly is obtained, bony weakening (bone rarefaction) can be prevented especially, lipid metabolism can be urged, and the high diet processed food of the alpha-amylase inhibitor operation effectiveness can be obtained further.

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**TECHNICAL PROBLEM**

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[Description of the Prior Art] Generally, it is supposed that many of obesity is guided by intake of a superfluous calorie and the consumption fall of energy. In order to refrain from intake of a superfluous calorie, it is needless to say, and the caloric intake itself is restricted, or a stock-in-trade restricts a high calorie component like a fat or a saccharide, and it is common to use metabolic turnover articles, such as a low-calorie sweetener, further again, and to stop an intake calorie.

[0003] In recent years, the interest about food with the absorption inhibition effectiveness of high calorie nutrients, such as a fat, or its material is also high as a way stage of these obesity improvements, and especially, when a dietary fiber prevents absorption of a lipid or sugar, the interest is increasing as what prevents absorption of a superfluous calorie. In response to the intention of WHO, the Japan Society for the Study of Obesity general meeting was held in October, Heisei 11, and the "Tokyo Declaration" which advertized the importance of obesity prevention is adopted based on the present condition of the obesity in our country. Thus, an obesity improvement and prevention serve as a constant serious theme in society today.

[0004] Generally, in order to make the amount of consumption energy increase, it is effective to perform movement to which the body is moved directly, but when setting loss in quantity as the main purpose, reinforcement movement is needed and the activation is not easy. Moreover, although there is pharmacotherapy as a second best policy and there are an anorexing agent, a lipid absorption inhibitor, a digestion inhibitor, an adiposity inhibitor, a metabolic turnover accelerator, alpha-glucosidase inhibitor (alpha-amylase inhibitor), etc. variously, the present condition is that use is accepted only to obesity advanced in medicine, and it can say easily that it is widely used by neither.

[0005] In addition, relevance of obesity with lifestyle-related diseases (adult disease), such as diabetes mellitus, is high, and the need for the prevention or a dissolution is pointed out strongly again. Although the various going-on-a-diet methods including current, obesity improvement food, or diet food are proposed, the present condition is that development of the active principle for the further insurance and effective diet food is called for in addition.

[0006] It is also just going to be known by using the matter which checks the activity of the enzyme which participates in the reaction in the living body which results in them as one means of prevention of the above-mentioned obesity that it can attain. That is, it is thought that obesity can attain the above-mentioned purpose also by using a digestive enzyme inhibitor, for example, alpha-amylase inhibitor.

[0007] In addition, the diet edible material which consists of the water-soluble peptide and effective water-soluble materials which are obtained by carrying out enzyme processing of the beef as a conventional technique is indicated by JP,10-66542,A. Moreover, the diet food containing an animal compound amino acid peptide, vitamin B, caffeine, and calcium is indicated by JP,12-189108,A. Moreover, the animal meat peptide which has carnitine, lactobacillus bifidus, gal senior extractives, The lipid metabolism processed food which used a purslane and tea-leaves extractives as the enteric sugar-coated tablet is indicated by JP,12-228967,A. Moreover, the diet food containing the peptide extracted from the muscles of the sheep is indicated by JP,6-225726,A. Moreover, protein or a protein inclusion is hydrolyzed from a protease or an acid, and it is manufactured, and average peptide chain length is 3-4, and the lipid metabolism improvement agent which makes an active principle the low-molecular peptide included at least 50% or more and which has triglyceride fall ability is indicated by JP,5-87052,B. In these things, what put in the corpuscle and internal organs of a cow or the sheep as an animal peptide is seen.

[0008] It is what was made in order that this invention might improve these further after taking the above-mentioned conventional example into consideration in view of a demand of the strong society to current various social situations and the current safety to food variously and might solve this technical problem. Although often eaten daily, the foods selected carefully from inside are used, and it aims at providing the body with the raw material for obesity improvement food and diet food and this processed food of

insurance and low calorie content extremely. Moreover, this invention aims at preventing weakening (bone rarefaction) of the bone about which we are anxious during a diet with activation of lipid metabolism.

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MEANS

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[Means for Solving the Problem] In order to attain the above-mentioned purpose, it is the diet processing food-grade raw material characterized by invention according to claim 1 coming suitably to blend the peptide of the vegetable origin which understands by the enzyme and is obtained and the peptide of the oceanic origin, and/or oceanic polyphenol component content food. In this invention, a diet operation is conjointly invited to the combination of the peptide component which has fat metabolism, and the polyphenol component which has an alpha-amylase inhibitor operation at an effective target. Moreover, in this invention, both the operations effectiveness quick-acting and with a delayed effect is taken into consideration. That is, since it comes to blend the oceanic origin with a strong reduction operation of body fat by the peptide and chronic administration of the vegetable origin with the strong digestion depressant action of a fat in 1-time administration suitably, a very safe diet processing food-grade raw material gentle to the well-balanced body as an obesity improvement or an object for diet food can be obtained.

[0010] Moreover, invention according to claim 2 is characterized by said rates of a compounding ratio being 1:9-9:1. since the rate of a compounding ratio was broadly adopted in this invention -- a case -- dividing -- that is, the obesity improvement which has the broad operation effectiveness and diet processing food-grade raw material which can emphasize suitably both the operations effectiveness quick-acting and with a delayed effect, respectively can be obtained.

[0011] Moreover, invention according to claim 3 is characterized by coming to blend vitamin Ks and/or pantothenic acid with said diet processing food-grade raw material suitably. In this invention, since a vitamin K and pantothenic acid were blended, the operation which prevents weakening (bone rarefaction) of the bone by diet, and activates lipid metabolism further is seen.

[0012] moreover, invention according to claim 4 -- said vitamin Ks and/or pantothenic acid -- 0.1-10mg % of the weight -- it is characterized by coming to blend. In this invention, since the vitamin K and the combination rate of pantothenic acid were specified, the operation which prevents weakening (bone rarefaction) of the bone by diet effectively, and activates lipid metabolism still more effectively is seen.

[0013] Moreover, invention according to claim 5 is characterized by said peptide chain length being 3-8. In this invention, since it comes to limit peptide chain length, the operation effectiveness can make a clear low-molecular peptide an active principle.

[0014] Moreover, invention according to claim 6 is characterized by the peptide of said vegetable origin containing at least one or more of barley, wheat, a potato, an soybean, a Chinese quince, and wine lees. In this invention, since it comes to carry out limited listing of the peptide of the effective vegetable origin as a fat metabolic regulation peptide, that operation effectiveness shows up clearly.

[0015] Moreover, invention according to claim 7 is characterized by said polyphenol component content food being marine algae. oh which is used in this invention -- the marine algae containing brown algae, such as \*\*, -- that component -- phloroglucine, its polymer (FURORO tannin) (reference name: the April, Heisei 12 issue, Nobuo Yamada work "science of seaweed use" the 198th page), etc. -- etc. -- polyphenol is contained. About this polyphenol, as a result of this invention persons' repeating examination wholeheartedly, it was found out that there is a very strong alpha-amylase inhibitor operation. Therefore, since generation of grape sugar is controlled from starch, generation of the neutral fat of the grape sugar origin is severed, and obesity prevention can be expected.

[0016] moreover, the seaweed which uses invention according to claim 8 as said polyphenol component content food -- oh, it is characterized by being brown algae, such as \*\* (\*\*\*\*). in this invention, polyphenol, such as phloroglucine and its polymer, is contained for that component, and alpha-amylase inhibitor is accepted -- oh, since brown algae, such as \*\*, were adopted, it is suitable as an obesity improvement or a diet processing food-grade raw material.

[0017] Moreover, invention of claim 9 is characterized by basing the peptide of said oceanic origin on fishes. In this invention, since that existence adopted the fishes peptide accepted as an oceanic peptide, it

is suitable as an obesity improvement or a diet processing food-grade raw material. [ many ]

[0018] Moreover, the fishes which use invention of claim 10 as a peptide of said oceanic origin are characterized by being based on a sardine and/or mackerel. the sardine peptide with which many that existence is accepted as a fishes peptide in this invention, and mackerel — since the peptide was adopted, it is suitable as an obesity improvement or a diet processing food-grade raw material.

[0019] Moreover, invention of claim 11 is characterized by coming to blend the sardine peptide obtained similarly with the soybean protein peptide which understands by the enzyme and is obtained in 3:7–7:3. In this invention, since the high soybean protein and the high sardine of that operation effectiveness were adopted as a zymolysis peptide, it is more suitable as an obesity improvement or a diet processing food-grade raw material.

[0020] moreover, the sardine peptide similarly obtained by the soybean protein peptide which understands invention of claim 12 by the enzyme and is obtained — and — oh, it is characterized by coming to blend \*\*\*\*\* in 3:7–7:3. in this invention, the high soybean protein, the sardine, and alpha-amylase inhibitor of that operation effectiveness are accepted as a zymolysis peptide — oh, since \*\* was adopted, it is more suitable as an obesity improvement or a diet processing food-grade raw material.

[0021] moreover, the soybean protein peptide and sardine peptide which understand invention according to claim 13 by the enzyme, and are obtained — oh, it is characterized by coming to blend \*\*\*\*\*, vitamin Ks, and/or pantothenic acid. In this invention, since it comes to use it combining the effective obesity improvement which has improved variously as mentioned above, or a diet processing food-grade raw material, the diet processing food-grade raw material with which those operation effectiveness is seen in multiplication is obtained.

[0022] Moreover, invention according to claim 14 is a diet processed food which comes to use said diet processing food-grade raw material according to claim 1 to 12. In this invention, since it comes to use the effective obesity improvement which has improved variously as mentioned above, and a diet processing food-grade raw material, the diet processed food with which those operation effectiveness is seen clearly is obtained.

[0023] moreover, the soybean protein peptide and sardine peptide which understand invention according to claim 15 by the enzyme, and are obtained — oh, it is the diet processed food which comes to use \*\*\*\*\*, vitamin Ks, and/or pantothenic acid. In this invention, since it comes to use the effective obesity improvement which has improved variously as mentioned above, and a diet processing food-grade raw material, the diet processed food with which those operation effectiveness is seen in multiplication can be obtained, bony weakening (bone rarefaction) can be prevented especially, and lipid metabolism can be urged further, and also the high diet processed food of the alpha-amylase inhibitor operation effectiveness can be obtained.

[Embodiment of the Invention]

[0024] this invention persons resulted in the completion of this invention which uses those peptides as a principal component by understanding these materials by the enzyme and blending suitably the thing of the vegetable origin, and the thing of the oceanic protein origin, as a result of examining the diet effectiveness and an obesity improvement effect wholeheartedly out of the ecology accommodation function which it has [ sardine / these soybean protein, ]. furthermore — oh, paying attention to the polyphenol component obtained by carrying out an organic solvent extract with water alcohols being contained in marine algae, such as \*\*, this is blended with the above-mentioned material and the obesity improvement operation effectiveness is found out further. in order for this invention persons to prevent weakening (bone rarefaction) of the bone by diet further again — vitamin K 2 etc. — in order to find out that it is effective to add vitamin Ks and to urge the further lipid metabolism, it finds out that it is effective to add pantothenic acid, and it results in completion of this invention.

[0025] This invention can acquire the effectiveness which is not seen by these independent things by combining an oceanic peptide, a vegetable peptide, and/or oceanic polyphenol component content food, and using \*\*. for a sardine, by the following tables 1 and 2, a lot of peptides include so that clearly — having — \*\*\*\* — in addition — and the amino acid covering other types is included. moreover, by Table 3 – 6 which carries out a postscript, many peptides effective for an improvement and diet of obesity contain in an soybean so that clearly — having — \*\*\*\* — moreover — oh, enzyme inhibition activity is contained also in \*\* and many polyphenol, such as phloroglucine in which an obesity improvement and the diet effectiveness are accepted, and its polymer, is contained. moreover — oh, coming to also contain the material used as the raw material of an alginic acid is also known by \*\*.

[0026] The fatty acid which is the component which constitutes the fat although the fat which it is under obesity is a high calorie and high energy nutrient needless to say serves as a form which is incorporated by the intracellular mitochondrion, produces ATP aerobically through beta-oxidation, TCA cycle, and the oxidative phosphorylation, and is easy to use as energy, and is disassembled into a carbon dioxide and

water. It can be called that to which advancing lipid metabolism based on these elucidations leads to the operation effectiveness of the improvement of obesity, or a diet. Moreover, although an alpha-amylase inhibitor, for example, starch, serves as grape sugar by alpha-amylase and this grape sugar is metabolized by carbon dioxide gas and water by movement and others, if it becomes the lack of movement, this grape sugar will serve as body fat (obesity). Therefore, if alpha-amylase inhibitor exists, generation of grape sugar will be suppressed and obesity will be suppressed.

[0027] The oceanic protein used for the diet processing food-grade raw material in this invention and the low-molecular peptide slack oligopeptide of the soybean origin have the operation which decreases (1) body fat, and the operation which controls the digestion of (2) carbohydrates and sugar. The low-molecular peptide of the oceanic protein origin is performing as follows the operation which decreases body fat. People's body usually disassembles the protein taken in into a peptide first, and is disassembling and carrying out digestion even of the amino acid for the peptide further. And it compounds with peptide → protein from the amino acid absorbed conversely, and the body is made this time. A fat burns as an energy source at the time of this protein synthesis. However, since molecular weight is small, the low-molecular peptide of the oceanic protein origin is absorbed with a peptide, without disassembling even amino acid. For this reason, it is fewer than usual one process, absorption efficiency is very good, the amount of the fat which burns as an energy source in that part protein synthesis also increases, and the excessive fat currently therefore attached to the body burns rapidly, and decrease in number.

[0028] In addition, it is supposed again that it has the operation which controls the digestion of a carbohydrate and sugar in the peptide of the above-mentioned vegetable origin, for example, the low-molecular-weight peptide of the soybean origin, and although vegetation, such as not only an soybean but wheat, barley, etc., is in the fate eaten by the animal, if all will be eaten up and it will be carried out, his descendant cannot leave it. Then, the matter (it has the operation which controls work of alpha-amylase inhibitor / digestive enzyme) which stops the digestion of a carbohydrate is included so that a part may return from excrement to the earth, without carrying out digestion for all even if eaten by the animal. It has an alpha-amylase inhibitor operation, and both cooperate, and there is also a polyphenol component of the seaweed origin, and it severs generation of the neutral fat of the grape sugar origin from starch so that it may mention later. Barley, wheat, a potato, a Chinese quince, wine lees, etc. can use it for the peptide of this vegetable origin other than an soybean. Starch, the dextrin, the collagen, etc. contain in these and reducing cholesterol and neutral fat is accepted in them. Since the peptide of these vegetable origins is blended, a diet processing food-grade raw material with suitable color and taste is obtained.

[0029] moreover, the marine algae containing brown algae which are one component which constitutes this invention — as a mixed component — suitable — especially — oh, it has become clear that the polyphenol component contains in \*\* and there is alpha-amylase inhibitor, and enzyme inhibition activity is contained — oh, \*\* is very suitable as a material for diet processing food-grade raw materials. as the enzyme inhibition of the purpose of this invention to this invention — oh — from \*\* — an extract — powder and a liquid are contained. oh [ this ] — the component extract of \*\* — first — a mixer — oh, \*\*, pure water, and a methanol are put in, a methanol is added after grinding, and it is immersed at a room temperature. An immersion object carries out cerite filtration and condenses filtrate. The heating dissolution of the concentrate is carried out at pure water, it filters through a filter paper, filtrate is condensed again, and it may dissolve in pure water. Thus, if the obtained syrup or the freeze-drying powder is added for food, for example, confectionary, a digestive enzyme inhibitor, for example, the diet food by alpha-amylase inhibitor activity, will be obtained.

[0030] Moreover, K1 of nature [ vitamin Ks / which are one component which constitutes this invention ] And K2 Existence is known well and these are fat soluble vitamins with an anti-bleeding operation. Moreover, vitamin K 3 called menadione It is synthetic-compounds 2-MECHIRU 1,4-naphthoquinone, and has the strong vitamin operation. gamma-carboxy glutamic-acid residue is contained in the protein combined with calcium, such as a thrombin, in a clot-of-blood factor with regards to generation of the prothrombin this vitamin K of whose is the base of the blood coagulation enzyme thrombin in blood, and being the component which needs a vitamin K for this gamma-carboxylation is admitted. consequently, the operation which prevents bony weakening (bone rarefaction) to a vitamin K — accepting — \*\*\*\* — it became like. This invention is made to act effectively and good conjointly with the various components of the above [ the operation which these vitamin Ks have ] as a diet processing food-grade raw material and a diet processed food. Especially, weakening (bone rarefaction) of the bone which is easy to happen during a diet is prevented.

[0031] Moreover, the pantothenic acid which is one component which constitutes this invention is one of the vitamin B complex, and being extremely distributed over an animals-and-plants in-house broadly with a minute amount is known. This pantothenic acid is used as a calcium salt or sodium salt. As this deficiency symptom of an animal object, the denaturation of a growth arrest, dermatitis, and a nervous system, the

abnormalities of a digestive system, reduction of the antibody production force, the depression of the adrenal cortex, etc. are known. Furthermore, the lipid metabolism operation is accepted in this pantothenic acid in recent years, and this invention is made to act effectively and good conjointly as a diet processing food-grade raw material and a diet processed food with the various components of the above [ the lipid metabolism operation which this pantothenic acid has ].

[0032] This invention depends a protein inclusion on the peptide which understands by the enzyme and is obtained, and the description is to make into an active principle the low-molecular peptide whose average peptide chain length is 3-8. It is the new diet food raw material which controls body fat by blending the strong peptide (oceanic protein origin) of a reduction operation of body fat by the suitable ratio by the strong peptide (vegetable origin) and the chronic administration of digestion depressant action of a fat in 1-time administration. Many peptides are contained by the high ratio, and many amino acid is contained in this sardine peptide so that clearly [ a sardine ] from the following tables 1 and 2.

[0033] Protein and its decomposition product (a peptide and amino acid) are widely distributed in a cell, and it is just going to be known well to have played the role important for maintenance (for body protein, an enzyme in the living body, hormone, etc. to be made) of a life. In addition to a fundamental trophicity, its attention is paid to a sardine peptide also in it suitable as a functional food material about control of some a living body's physiological functions, and that the hypolipidemic action is accepted in this sardine peptide.

[0034] In addition, as for the diet processing food-grade raw material and diet processed food by this invention, by fluid bed granulation (all components are mixed once, subsequently water is added and it is made liquefied, and disintegration is carried out after mixing further), since it becomes porosity (the molecular structure becomes granularity), it is easy to melt into water and mouthfeel does not become chalky, but a nutrition component becomes absorbed [ tend ] by the body. Moreover, when the improvement of the constipation often during a diet seen is achieved by combination of a water-soluble dietary fiber and it drinks by it, feeling of fullness is obtained, and it acts on the diet effectiveness good as a result. In addition, the vitamins and minerals other than a vitamin K and pantothenic acid can also be added according to recommended dietary allowance.

[0035]

[Table 1]

【表1】サーデンペプチド分析表

試験項目	基準測定値	測定結果	分析方法
水分 (%)	<9.0	8.1	減圧乾燥法
pH	5.5~7.0	5.6	
塩分 (%)	<5.0	4.9	モール法
全窒素 (%)	12~16	14.1	セミミクロ ケルダール法
粗脂肪 (%)	<1.0	0.1	ソックスレー抽出法
ペプチド (%)	>85.0	86.2	高圧液体 クロマトグラフィー
(乾燥サンプル)			
好気性プレート数	<5,000/g	<3,000/g	標準培地
(一般細菌数)			(標準寒天法)
大腸菌群	陰性	陰性	デノキシコレート 培地

[0036]

[Table 2]

【表2】サーデンペプチドアミノ酸組成表

アミノ酸名	数値 ( $\mu\text{mol/g}$ )	アミノ酸名	数値 ( $\mu\text{mol/g}$ )
ハイドロキシプロリン	<10.5>	バリン	53.3
アスパラギン酸	26.2	メチオニン	15.8
グルタミン	23.3	イソロイシン	42.1
アスパラギン	2.1	ロイシン	170.0
トレオニン	35.0	チロシン	23.7
セリン	35.4	フェニルアラニン	95.8
グルタミン酸	32.5	トリプトファン	22.5
プロリン	16.7	ヒスチジン	28.3
グリシン	21.2	リジン	69.2
アラニン	55.4	アルギニン	57.1
シスチン	6.2		

[0037]

[Table 3]

【表3】大豆ペプチド組成表

項目	ハイニユート		
一般分析	PM	S	R
水分 (%)	4.6	4.8	4.9
粗たん白 (%)	84.0	82.8	83.7
粗灰分 (%)	5.9	5.3	6.3
糖質・その他 (%)	5.5	7.1	5.1
粗たん白分析	PM	S	R
NSI	99.9	96.8	100.0
15%CA			
可溶性たん白 (%)	99.7	87.4	99.7
平均ペプチド鎖長	3.2	3.5	3.2
遊離アミノ酸 (%)	14.5	12.8	13.7

[0038]

[Table 4]

・【表4】大豆ペプチドのアミノ酸組成表(1/2)

アミノ酸の種類	ハイニュート		
必須アミノ酸	PM	S	R
スレオニン	37	38	37
チロシン	34	35	33
フェニルアラニン	49	52	45
システイン	13	13	11
メチオニン	12	12	11
バリン	44	46	43
イソロイシン	44	46	42
ロイシン	72	78	70
リジン	62	61	61
トリプトファン	12	14	10
ヒスチジン	24	24	23
非必須アミノ酸	PM	S	R
アスパラギン酸	120	127	116
セリン	52	53	52
グルタミン酸	208	198	203
プロリン	53	53	50
グリシン	40	41	39
アラニン	38	42	38
アルギニン	77	74	73

[0039]

[Table 5]

【表5】大豆ペプチドのアミノ酸組成表(2/2)

FAO/WHO/UNU(1985)の基準値

	乳 児	2～5歳	10～12歳	成 人
必須アミノ酸				
スレオニン	43	34	28	9
チロシン	72	63	22	19
フェニルアラニン	72	63	22	19
システイン	42	25	22	17
メチオニン	42	25	22	17
バリン	55	35	25	13
イソロイシン	46	28	28	13
ロイシン	93	66	44	19
リジン	66	58	44	16
トリプトファン	17	11	9	5
ヒスチジン	26	19	19	16

[0040]

[Table 6]



・【表6】あらめ成分表

成分名	数値 (g/100g)
水分	9.7
粗脂肪	0.1
マンニット	3.53
ラミナラン	13.32
アルギン酸	17.87
粗繊維	10.4
粗たんぱく質	8.0
灰分	17.7
糖質	54.1

以上の他、ポリフェノール類として、フロログルシンおよびその重合体が含まれている（文献名：平成12年4月発行、山田信夫著「海藻利用の科学」第198頁）。

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[Translation done.]

**\* NOTICES \***

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1. This document has been translated by computer. So the translation may not reflect the original precisely.

2. \*\*\*\* shows the word which can not be translated.

3. In the drawings, any words are not translated.

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**EXAMPLE**

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[Example] The example of this invention is given and explained below.

(Example 1) By the following formula, the diet processing food-grade raw material was obtained.

(a) After adding water and a phosphoric acid in the end of a cleaning fish meal (sardine: made in Joban Phytochemistry Lab) and adjusting pH to 2.8, acid protease was added and it was made to react at 50 degrees C for 20 hours. After the reaction, after heating the reaction mixture concerned for 30 minutes at 80 degrees C and stopping a reaction, the water suspension of a calcium hydroxide was added and pH was adjusted to 6.5. After adding diatomaceous earth to this, it filtered by 100mesh, spray drying of the obtained filtrate was carried out, and powder was obtained. The average peptide chain length of this thing was 3.5.

(b) Subsequently, after adding water and a phosphoric acid to soybean protein (FUJI OIL Co., Ltd. make) and adjusting pH to 2.8, acid protease was added, it was operated like the above (a), and powder was obtained. The average peptide chain length of this thing was 3.6.

(c) Two sorts of powder obtained by doing in this way was mixed at (a)50% and (b)50%, and the container which carried out sterilization processing was filled up. The obtained powder is light yellow, and had the flavor of a proper, and the diet processing food-grade raw material without the different taste and a nasty smell was obtained.

[0042] (Example 2)

By the following formula, the diet processing food-grade raw material was obtained.

a) After adding water and a phosphoric acid in the end of a cleaning fish meal (sardine: made in Joban Phytochemistry Lab) and adjusting pH to 2.8, acid protease was added and it was made to react at 50 degrees C for 20 hours. After the reaction, after heating the reaction mixture concerned for 30 minutes at 80 degrees C and stopping a reaction, the water suspension of a calcium hydroxide was added and pH was adjusted to 6.5. After adding diatomaceous earth to this, it filtered by 100mesh, spray drying of the obtained filtrate was carried out, and powder was obtained. The average peptide chain length of this thing was 3.5.

b) Subsequently, after adding water and a phosphoric acid to soybean protein (FUJI OIL Co., Ltd. make) and adjusting pH to 2.8, acid protease was added, it was operated like the above (a), and powder was obtained. The average peptide chain length of this thing was 3.6.

c) two sorts of powder obtained by doing in this way — the amount of (a)20%, and (b) 50% — carrying out — these — oh, the amount of 30% of \*\*\*\*\* was mixed, and the container which carried out sterilization processing was filled up. The obtained powder is light yellow, and had the flavor of a proper, and the diet processing food-grade raw material without the different taste and a nasty smell was obtained.

[0043] (Example 3) By the following formula, the diet processing food-grade raw material was obtained.

a) After adding water and a phosphoric acid in the end of a cleaning fish meal (sardine: made in Joban Phytochemistry Lab) and adjusting pH to 2.8, acid protease was added and it was made to react at 50 degrees C for 20 hours. After the reaction, after heating the reaction mixture concerned for 30 minutes at 80 degrees C and stopping a reaction, the water suspension of a calcium hydroxide was added and pH was adjusted to 6.5. After adding diatomaceous earth to this, it filtered by 100mesh, spray drying of the obtained filtrate was carried out, and powder was obtained. The average peptide chain length of this thing was 3.5.

b) Subsequently, after adding water and a phosphoric acid to soybean protein (FUJI OIL Co., Ltd. make) and adjusting pH to 2.8, acid protease was added, it was operated like the above (a), and powder was obtained. The average peptide chain length of this thing was 3.6.

c) two sorts of powder obtained by doing in this way is made into an amount (a)20%, and (b) 40%, and the vitamins and mineral of vitamin K 2 20mg%, the amount of pantothenic acid 10mg%, and others are included in these — oh, the amount of 40% of \*\*\*\*\* was mixed, and the container which carried out sterilization

processing was filled up. The obtained powder is light yellow, and had the flavor of a proper, and the diet processing food-grade raw material without the different taste and a nasty smell was obtained. As a result of continuing and taking the diet processed food (example 4) which used this diet processing food-grade raw material at two weeks - 12 weeks, the obesity improvement was found so that it might see in Table 6. [0044] (Example 4) The energy and the nutrition component of a diet processed food which were obtained according to the example 3 were as follows.

140kcal (40g) energy and nutrition facts: One bag of inside of 1 meal (40g) Taste A Taste B Taste C A heating value and nutrition component (yogurt taste) (cocoa taste) (strawberry taste)

A heating value (kcal) 137.20 137.60 137.20 Protein (g) 16.68 18.24 16.28 Lipid (g) 0.20 1.04 0.24 Sugar (g) 17.12 13.84 17.48 Sodium (mg) 160.40 172.00 165.20 vitamin A (IU) 1400. 00 1320.00 1560. 00 Vitamin B1 (mg) 0.628 0.60 0.632 Vitamin B2 (mg) 0.136 0.144 0.136 Niacin (mg) 10.28 7.96 9.56 Pantothenic acid (mg) 3.7323.944 3.996 vitamins B6 (mg) 0.816 0.816 1.064 Vitamin B12 (mug) 1.00 1.20 1.20 Folic acid (mug) 80.00 72.00 84.00 Vitamin C (mg) 40.00 38.40 46.00 Vitamin D (IU) 64.00 64.00 92.00 Vitamin E (mg) 4.04 3.76 3.88 Vitamin K 2 (mg) 8.00 8.008.00 Iron 7.00 (mg) 7.76 7.68 Calcium (mg) 282.80 320.40 277.60 Magnesium (mg) 50.8065.20 51.20 Potassium (g) 0.264 0.3640.268 Lynn (mg) 238.00 270.80 236.00 Dietary fiber (g) 4.20 4.144.16 [0045] (Example of a trial) oh — the polyphenol extraction method of \*\*, and alpha-

amylase inhibitor activity trial: — adjustment approach [ of 1. sample ]: — a mixer — oh, 500g [ of \*\* ] (Product made from Watanabe Fishery), 1000ml [ of pure water ], and methanol 200ml was put in, methanol 300ml after grinding was added, and it was immersed at the room temperature for 240 hours. The immersion object carried out cerite filtration and condensed filtrate (21.8g). The concentrate carried out the heating dissolution at 100ml of pure water, and it filtered through the filter paper, filtrate was condensed again, it dissolved in 100ml of pure water, and it was made into the sample.

2. The experiment approach : it is sample (it is pure water at time of blank) 1ml to a test tube. The remaining heat of the 1ml (pancreatin: Wako reagent) of the alpha-amylase was put in and carried out for 37-degree-C 10 minutes, 3ml (Wako reagent) of fusibility starch was put in, and the reaction was started. The sugar of reaction mixture was measured in Somogyi method \*1.

\*1) Somogyi method (basic food group experiment document)

Put 1ml of reaction mixture, and 1ml of copper reagents into the test tube, it was made to react for 10 minutes in hot water, and depositing copper was made to color with a Nelson reagent. It is a spectrophotometer (UVmini1240SHIMADZU) after 15 minutes. Absorbance O.D.450nm was measured and the difference of the amount of glycogenesis estimated alpha-amylase inhibitor activity.

alpha-amylase inhibitor activity formula: —  $\{(S-Bs) - B\} / B \times 100S$ : — absorbance Bs: of a sample — blank B: of a sample — the blank, consequently the rate of alpha-amylase inhibitor inhibition of a sample were 43 (%).

[0046] The following of the case which drank the diet processed food which used the diet processing food-grade raw material by this invention is carried out.

Case by BMI(Body Mass Index) \*: \* value measuring method: Weight (kg) / (height (m)) Two names/Week  
 0w 2w 4w 6w 8w 10w 12w A 54.4 53.6 53 53 51.5 51 50.6 B 53.2 50.8 49.6 48.8 47.8 48.2 47.2 C 68 66.4 64.6 64.2 61 D 63.8 61.2 61.2 60.6 59.2 57.2 E 74 70.6 69.268 66.2 65.2 63.4F 7574.4 71.2 69 68.266.8  
 average \*\* standard deviation 64.7\*\*9.4 62.8\*\*9.4 59.5\*\*8.1 61.0\*\*8.7 Ratio of the 58.4\*\*8.7 57.7 \*\*7.6  
 average 1 0.97 0.92 0.94 0.91 0.91 0.89 averages BMI 26.4 25.63 24.28 24.8923.91 23.83 The average age and height of change 6 case of 23.55: Name Age Height (cm)  
 A 22 163B 30 151C 41 161D 33 154E 30 156F 39 The 155 averages 32.5 156.6

[Translation done.]